Towards a Second Order Research Methodology

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Abstract: This paper addresses the need for re-examining the cognitive perspective on the role of language in social research. From the autopoietic perspective, language is not a tool to reveal an objective world; rather language is a venue for action, coupling the cognitive domains of two or more agents. Responsible research enquiry would seek to create systemic communication practices that allow the co-existence of differing understandings within. Creating a dialogue for exploring and emerging meaning is essential in developing understanding and validating the research results.

Keywords: autopoiesis, social systems, language, dialogue, research method, systems thinking

1. Introduction

The application of any research methodology without reflection on the underpinning assumptions is flawed. What is more, such an approach is bound to lead us to an incomplete understanding of the situation under consideration, since it places 'restrictions' on the ways we question the validity of the knowledge unearthed in the application of the methods. Thus, creative interpretation becomes limited. The paper considers this problem. It emphasises the importance of theoretical reflection and an epistemological perspective in exploring the assumptions underlying research designs. The discussion focuses in more detail onto the role of language in the research process.

Crotty (1998) suggests that the basic elements of any research process include methods, methodology, theoretical perspective(s) and epistemology. Thus, it is essential for any rigorous research attempt to clarify and explore the answers to the questions:

- What methods (techniques, procedures, i.e. interviews, observations, etc.) are to be used?
- What methodology (strategy, plan of activity, process of design, i.e. ethnography, action research, etc.) governs our choice of methods?
- What are the theoretical (philosophical) perspective(s) of looking at the world and making sense of it (i.e. systemic thinking, complexity theory, theory of language, etc.) that influence our logic and criteria and provide context for applying the methodology?
- What epistemology grounds the theoretical perspective(s)?

The above questions and any proposed answers are interlinked and are best considered as mutually determined.

The intention of this paper is to go beyond simple answers and explore epistemological and other theoretical perspectives within the context of research design, based on a rigorous understanding of the human condition (that is, our way of being human) in both its biological and social embodiments. It is the theory of autopoiesis that offers such an understanding. The paper focuses on an autopoietic perspective on knowing, the role of language, and the systems approach.

2. Autopoiesis, experience and knowledge

It is through our particular way of being that we act as observers. Thus, everything we say (even to ourselves), is said by one observer to another. Consequently, our capacity to distinguish and therefore, our knowledge, depend upon the make-up of the particular observer.

Since the observer is a living entity, a 'true' insight into the domain of knowledge requires an understanding of cognition that takes into consideration the biological phenomenon and is mindful of the observer's role within it. The theory of autopoiesis is based on explaining the generative process of the living. Autopoiesis is the mechanism that defines the manner in which a living system exists as a distinguishable entity (Varela, 1996).

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An autopoietic system is a network of processes for production of components that:

- Through their interaction and transformations continuously, regenerate the network of processes that produced them;
- Constitute the entity as a concrete unity in the space by specifying the topological domain of its realisation as such a network (Maturana and Varela, 1980).

Consequently, an autopoietic system that exists in a physical space can in general be thought of as a living system.

Autopoiesis is basic to the living individual. What happens to the individual is subservient to its autopoietic organisation, for as long as it exists the autopoietic organisation remains invariant (Varela, 1979). What this means, is that the living individual is an autonomous entity that actively maintains its identity. Its identity and therefore its emergent global properties are generated through a process of self-organisation within its network of components. A two-way process of local-to-global and global-to-local causation (Figure 1) conditions this process of self-organisation

Internal Dynamics (Local) ↔ **Autopoietic Entity** (Global) ↔ **Environment** (World)

Figure 1: The mutual embeddedness of component dynamics, autopoietic entity and its environment.

Firstly, there is the local-to-global determination ('upward' causation) through which the entity, with its properties, emerges. Secondly, however, there is global-to-local determination ('downward' causation), where global characteristics constrain or direct local interactions between the components (Varela, 1979). For example, in organisms with a nervous system, the rules of interactions within the neuronal network are in reciprocal relationship with the overall activity of the autopoietic entity. Largely, behaviour is a regulator of perception. That is to say, what the organism senses is a function of how it behaves, and how it behaves is a function of what it senses. Situated behaviour, thus, takes the form of coupling (often referred to as 'structural coupling') with the environment, where environmental perturbations trigger changes in the entity but do not determine them, because changes in autopoietic systems are necessarily subservient to conservation of identity.

The dialectics of the living are based on the necessary emergence of a meaning relevant to the perspective of the cognitive self (for example one's perception), and on a coupling with the environment which refers to the necessary dependence of the self on its environment (for example socio-linguistic interactions). Consequently, the contents of human experience (how the world appears to us); depend crucially on the mutual embeddedness of the neuronal dynamics (included in the overall physical and chemical dynamics), the human agent as a unity with global properties (body, mind, consciousness, self and so on) and, the environment. Thus, human experience is personal but not private. Experience is clearly a personal event, but that does not mean it is private, in the sense of some kind of isolated subject that is parachuted down onto a pre given objective world. This irreducibility of human experience, from the duality portrayed by the embodiment and the situatedness of the human agent, cannot be underestimated when developing approaches or methodologies for research (Varela, Thompson and Rosch, 1991).

3. Autopoiesis and the role of language

The coupling of a living organism with its environment may include interacting with other organisms and if the interacting organisms reciprocally select each other, their respective paths of ontogenic structure changes, generating a domain of communicative interactions. The individual ontogenies of the participating organisms occur as part of the network of co-ontogenies that comes about in constituting higher order or social unites.

> *'As observers we designate as communicative those behaviours which occur in social coupling and as communication that behavioural co-ordination which we observe as a result*

> *of it'. (Maturana and Varela, 1987)*

This consensual domain of communicative interactions in which behaviourally coupled organisms orient each other with modes of behaviour, whose internal determination has become specified during their coupled ontogenies, is a linguistic domain. The name 'linguistic domain' was chosen because such learned communicative behaviours constitute the basis for language, although they are not identical with it. The conduct of each organism is internally determined by its autopoietic structure; however, the conduct of one organism is a source of perturbations for the others while the coupling lasts. The linguistic domain, therefore, is intrinsically non-informative, although the observer may describe it as if it were so. What determines the interaction is the dynamics of structural coupling of the interacting organisms.

Such a view contradicts the more traditionally established metaphor of 'the transmission of information', in which, communication represents something generated at a certain point, carried through an information channel and delivered to a receiver. This metaphor is not correct, since biologically there is no transmitted information. (Krippendorff, 1997) Moreover, it presupposes that what happens to the receiver (listener) is predetermined only by the perturbing agent (sender). In fact, however, communication depends on not only what is transmitted, but also what happens in the organism that receives it. Communication, therefore, is a matter of mutual orientation, primarily with respect to each other's behaviour, and secondarily with respect to some subject (Maturana and Varela, 1980).

Therefore, language is a venue for action, coupling the cognitive domains of two or more actors. Language should not be regarded as a system of symbols that are composed into patterns that stand for things in the world and thus reveal our 'objective' knowledge of it. Words are tokens for linguistic co-ordination of actions and not things we move from one place to another. Thus, it is appropriate to discuss languaging as an act rather than language as a symbolic notation. Since we exist in language, the domain of discourse that we generate becomes part of our domain of existence and part of the environment in which we conserve identity and adaptation. As observers, we live in a domain of recursive discourse. Thus, the unity of the human society is generated through the network of conversations that language generates and which through its closure generates language itself. Social systems exist, for their members, in co-creating reality. Where language agreements decide what is true and what is false:

> *' Human agreements decide what is true and what is false? It is what human beings say that is true and false; and they agree in the language they use. That is not agreement in opinions but in form of life'. (Wittgenstein, 1967)*

Thus, meaning becomes fundamentally social and language becomes part of everyday being in the world. The world is continuously innovated generating new possibilities through communication. Thus, by its design the communication structure needs to be open to evolution in order that it can accommodate and promote new opportunities. Autopoietic theory reintegrates the individuals as the fundamental creators of the communication structure.

It is through languaging that we coordinate our actions and create our world. Because of this, we have a responsibility to create communication practices that will allow, at least transiently, the coexistence of different understandings as we develop and explore our language together. Bohm (1987) suggests that a new type of dialogue is needed in human communications. The basic idea of this dialogue is to be able to talk while suspending your opinions, holding them in front of you, neither suppressing nor insisting upon them, not trying to convince but simply to understand. We must perceive all the meaning of everybody together, without having to make any decisions or saying who is right or who is wrong. It is more important that we all see the same thing.

In this way, an organisation is able to take conversations and collective practices to a deeper level. The form of dialogue, suggested by Bohm (2000), encourages opening up and engaging in listening

without a particular purpose, listening for the sake of hearing what other thoughts and opinions there are, what is being said, whilst trying consciously to suspend our assumptions and judgements. It is building awareness of what there is to be heard without focusing on it through the lenses of our judgements and assumptions. This 'listening' increases our chances of becoming sensitive and thus, able to hear the prejudices of agents outside ourselves.

This form of dialogue should be seen as a core element within any human enterprise, as it creates the context for all activities, rather than (as may be suggested by more traditional communication approaches) being merely part of the chain of activities. Dialogue is about involvement, about co-creation and communication. Therefore, a generative dialogue process in organisations will enhance their capability of developing a meaningful language providing a valid venue for action and continuous learning.

4. The systems approach, autopoietic epistemology and language

Insights from the systems thinking tradition are considered helpful in providing a holistic perspective. The systems thinking approach makes conscious and formal use of the concept of wholeness, as captured in the word system. The concept of a 'system' embodies the idea of a set of elements dynamically related in time. Each of which can affect the performance of the whole (Beer, 1979) however, none of which can have an independent effect overall (Ackoff, 1994). The system exhibits as a single whole, emergent properties which have no meaning in terms of the parts of the whole (Ashby, 1956).

> *'The system concept, the idea of a whole entity which under a range of conditions maintains its identity, provides a way of viewing and interpreting the universe as a hierarchy of such interconnected and interrelated wholes'.(Checkland, 1981)*

These definitions embody an approach that, unlike the reductionist methodologies, encourages an exploration of the relationships between elements, rather than concentrating on the properties of the individual elements themselves, therefore considering performance in terms of the systems structure (Senge, 1990). Further, there is an implication that systems are governed by the dynamic interactions of their components, a system's conduct is classified and analysed through the 'patterns of its behaviour', or its 'trends', rather than through seeking to predict events. This systemic perspective encourages 'closed loop thinking', where we are looking for continuing interrelated processes, rather than one way relationships (Ackoff, 1978).

The Systems Approach includes a set of theories that attempt to rigorously explore, analyse and diagnose systems behaviour, i.e. Viable Systems Model (Beer, 1979), Soft Systems Methodology (Checkland, 1981), Systems Dynamics (Senge and Sterman, 1992; Forrester, 1994), complexity and emergence (Nicolis and Prigogine, 1989).

The Systems Approach has proven its merits (Flood and Jackson, 1987). It is not the purpose of this paper to discuss them. What is important to reflect on in order to clarify our theoretical stance is, the observer has to be included as part of the system.

The most basic cognitive operation we perform as observers is the operation of distinction. It is through the operation of distinction that we specify a unity as an entity distinct from its background (Maturana and Varela, 1987). We characterise both the unity and the background with the properties with which the distinction endows them and specify their separability. If the observer applies the operation of distinction recursively and, thus, distinguishes the components within the unity, he redefines it as a 'composite unity', i.e. a system. It is through our human way of being that we perceive the world in terms of systems. The autopoietic epistemological perspective suggests that cognition (the distinctions we make) is conditional to embodiment. The act of cognition is a matter of interacting with the world, in the capacity in which one is able to interact, and not simply the act of processing what is objectively to be 'seen'. Thus, systems are epistemological qualities and not definitions of how things actually are or occur. Different observers perceive or describe systems, and

therefore, their boundary and their structure differently. The observer has to be accounted for as part of any explanation. Nevertheless, systems have become the means by which we explore and describe the consistency of situational behaviour. Therefore, descriptions of system structures are useful tools and, if some form of agreement can be reached about 'what a system does' then it is possible to communicate about its structure and boundaries with greater (in relative terms) coherence. Language needs to take account of a systemic vocabulary.

The definition of a system is a dynamical activity. It involves both objective and subjective reality and the cycle of perception and action, that unites them. Indeed, the definition of the system is likely to change in a whole host of ways when new distinctions are identified and become relevant. Thus, any attempt to freeze the definition of any system stifles creativity. It constrains knowing by forcing new explanations to be built on frozen categories, as though these were absolute truths given in nature rather than specified by us. Systemic language should continuously evolve and reinvent itself.

5. A second order research methodology

Having realised that perceptions of the same observation vary between observers and that systems themselves are dynamic and therefore changing. A second order research methodology is required to understand any given situation. This second order methodology seeks to understand the perceptions and opinions of the actors within the system under investigation as a primary activity, in this way developing understanding of the dynamics of the systems under investigation. Such a methodology is show in (Figure 2).

Second order methodology follows the recursive systems principles of Beer(1979). It is important that as many levels of recursion are considered as needed to encompass the organisation as a whole. Use of the process is in second order situations, where understanding of others understanding is required

The process outlined is iterative. It is a closed cycle of exploring, reflecting and developing language in dialogue. It requires that employee's participate in the process as researchers in their own right. In fact, the principle of employee's participation is crucial to the success and continuation of the process.

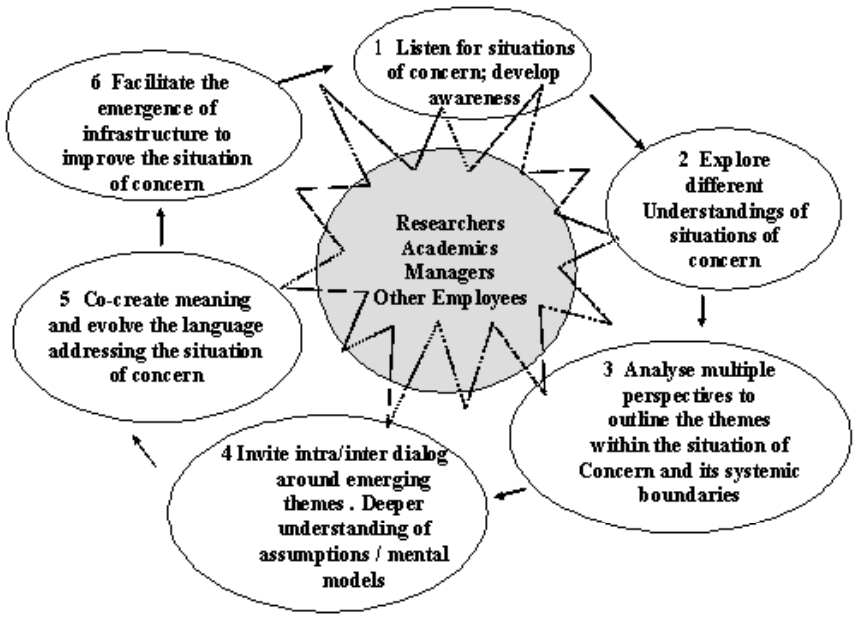

Figure 2: A 'second order' methodology

The individual stages 1-6 (Figure 2) are developed below:

5.1 Listen for situations of concern; develop *awareness*

Developing awareness is essential and the starting point of the process. Awareness' can spring from many sources. Activates considered prime candidates for developing awareness include meetings of all descriptions, organisational reviews, quality audits, reports, customer and employee surveys to name but a few.

Observing, experiencing, sensing, informal and formal communication practices (meetings, conversations, dialogue groups). These can feed into the emergence of situations of concern; this may be facilitated by managers and/or academics.

'Volunteer' researchers (employees, managers and or academics) meet key actors in the situation of concern (senior management and/or middle management, senior sponsorship is sought). A volunteer steering team emerges with a project leader that can facilitate effective communication within team and with other stakeholders. A project plan is outlined with regard to exploration, interviews, observations, meetings, and updated on a short-term basis.

5.2 Explore different understandings of situation of concern.

Within stage 2, the research explores differing understanding of the situation. People base their thinking and therefore conclusions and subsequent actions on preconceived beliefs. No matter how strange those beliefs seem to others' (Fish 1985). The team undertakes an examination of their varying views of reality, neither accepting nor rejecting them. Looking without judgment, accepting the views of others' exist and for them constitute reality.

Several recognised research methods can be employed within stage 2 these could include semi-structured interviews. For this, two researchers are more effective with one leading the interview with general questions and the other concentrating on peripheral matters arising from the main questions. In this way with few main topics, a richer picture can emerge allowing exploration and further analysis.

Dialogue groups with stakeholders are another approach; these sessions can be conducted by members of the project team or with the help of professional facilitation. Informal conversations and formal organisational meetings are also sources of research data. Intranet discussion forums allow individuals to partake in virtual discussion groups at time and place that suit themselves. A mixture of the above methods suited to the situation and system can be employed to provide research material that is used to develop an initial awareness and understanding of the situation(s) of concern.

5.3 Analyse multiple perspectives to outline the themes within the situation of concern and its systemic boundaries

Cross analysis of interviews by at least two researchers and if the subject is of high importance three is used to identify emerging themes of concern and identify the system boundaries as seen by the interviewees. Software tools such as Nudist or Atlas may be used to contribute to the language analysis however such tools are an assistance rather that a necessity. Whatever form of analysis is employed the outcomes should be an emergence and agreement within the organisation members of the theme(s) of concern and the system boundaries. Once emerged a recursive structure such as the Viable System Model Beer (1979) may be used to give a holistic systems approach.

Analysis of the multiple perspectives held by the team allows the underlying themes and varying concerns to be established. Churchman (1970) maintains that a wide analysis will produce a rich and complex picture. However, Ulrich (1983) points out that the purpose of the analysis will impose restrictions.

5.4 Invite intra/inter dialogue around emerging themes. Deeper understanding of assumptions/mental models

This stage seeks to deepen and increase shared understanding. The aim is to arrive at a view of reality shared by the team that

incorporates, while clarifying varying realties.

Section 4 may include systems thinking development workshops to share insight into systemic analyses and issues for dealing with complexity

Reflective dialogue is also a useful method if utilised around assumptions and insights from stage 3, representing a shared understanding not individual feedback.

It may be necessary to utilise professional facilitation within dialogue groups (Bohm's dialogue practices) in order to develop the focus to explore underlying assumptions and creation of shared meanings.

An important part of this stage is exploring and bringing into the open mental models, beliefs and assumptions. This is not an easy task but can be achieved with the use of influence diagrams (from systems dynamics), story telling, narratives, art, etc to bring into the open mental models beliefs and assumptions. Simulations models can be used as what-if micro worlds. The outcome from Section 4 is a deeper understanding of others and the system dynamics including underlying or hidden beliefs, assumptions and factors that affect the system

5.5 Co-create meaning and evolve the language addressing the situation of concern

As human beings, we communicate and conduct our lives through language.

Organisationally we use many languages, the language of the boardroom, the workshop, technical languages, etc. Most are full of terminology unknown to people outside the particular discipline. For the development of meaning leading to understanding, a common language understood by all is required.

Habermas (1976, 1984a, 1984b) discussing language and speech acts, points out that a shared language makes communication possible, that people then pass information and reveal their inner thoughts, while establishing interpersonal relationships.

Section 5 utilises dialogue sessions in order to gain deeper an understanding of developing beliefs and insight primarily to identifying and bring to the surface issues that need addressing. In addition, section 5 is used to evolve a common organisational language to deal with the situation(s) of concern (Krippendorff, 1997).

5.6 Facilitate the emergence of infrastructure to improving the situation of concern

Section 6 concentrates on facilitation to develop the emergence of infrastructures, strategies and implementation teams bases on insights and recommendations from section 5 One such approach that may be utilised is 'Deep Slice', in 'Deep Slice' teams with both a vertical and horizontal element give a departmental as well as organisational approach to section 6.

Department A	Department B	Department C	Department D
Department Head	Department Head	Department Head	Department Head
Supervisors	Supervisors	Supervisors	Supervisors
Specialists	Specialists	Specialists	Specialists
Implementers	Implementers	Implementers	Implementers

Table 1: 'Deep Slice' approach (Source Knowledge Management Workshop Presentation given by Professor David Weir at Draeger Safety UK, 3rd & 4th August 2004)

As can be seen from Table 1 deep slice teams have a vertical departmental based element. Vertically each team has members from all levels of the departmental championed by the departmental head. Members of other departments can be utilised as consultants if and when appropriate. The horizontal or organisational element is formed from teams at similar organisational levels such as departmental heads etc. The horizontal element brings the cross-departmental communication and exchange of ideas and opinions allowing an organisational wide holistic view. Thus, 'Deep Slice' provides the means of developing teams to address the outcomes of section 5 in a manner best suited to the organisation and situation(s) of concern.

The research process is an ongoing learning process. Stages 1-6 do not necessarily follow in order often being interlinked in multiple ways.

This methodology is based on insight from theory and practice. It has and will be continually revised and amended, as understanding grows. Developing and evolving in pace with the changing systems

This framework recognises and promotes organisations as evolving structures and looks at order as dynamic rather than static.

6. Setting the context for the proposed methodology, structure and order

This section outlines our understanding of the nature of organisations and thus provides the context for the use of the methodology.

It is vitally important to set up the context and reveal the assumptions in relation to understanding the nature of organisations as they condition our thinking. To gain understanding, researchers must be aware of the underlying assumptions and beliefs that drive the system that is the organisation.

Organisations are evolving structures; there is a need to clarify the interplay between structure and order.

Structure suggests some order. Order broadly speaking is related to recognised distinctions, arrangements and linkages between elements within one or many dimensions. Could this be the reason why implicitly we refer to structure as something static? However, a much deeper set of questions are, how is it that structure originates and grows, how is it sustained, and how does it finally dissolve? That is, how is the order sustained, changed, created or destroyed? Structure is dynamic and should be better referred as structuring, while relatively stable products of this process are structures (Bohm & Peat, 2000).

Recognising that it is structuring that is important rather than structure in itself is a revealing insight. What follows is a realisation that order is also dynamic and that our perceptions of order change in the continuous cycle of interaction between the subject and the object of knowing. The problem, however, is that in practice we often act as if the order that we perceive is a given or absolute reality. Very often social groups and societies work with categories of distinction upon which they implicitly agree, and because these categories are valid for the majority, they are accepted as if they have some sort of objective existence. This is dangerous because when the context of inquiry changes and new perceptions of order are needed, the mind tends to cling to these old perceptions since these are what have been accepted. Such implicit conventions of order, when held fixed, stifle creativity. Moreover, they can lead to a breakdown in communication between the supporters of the new emerging perceptions of order and the stabilised or well-accepted perceptions of order. This, of course, is because we tend to reinforce our concepts and beliefs as though they are absolute and in so doing we choose to fragment 'the world' from ourselves, without recognising that, we are participants in its creation.

What we need to remember is that our concepts and their meanings are moulded by the activities of our everyday life within our social group or society. When the context of this society changes new, categories are needed. Thus, working with the old set of concepts within the new context will more often than not result in inappropriate behaviour. In essence, our ordering of 'reality' influences how we live and our way of life gives meaning to our concepts. It becomes clear, therefore, that we should adopt fluid rather than fixed perceptions of structure and order.

Our Western culture embraces the perception of static order. Consequently, we implicitly believe that we can find an order (or a structure) that explains the behaviour of the system; or that we can conjure and implement an order that generate the behaviour that we want to achieve. It is the assumed position that the world is governed by orders that we call laws. Moreover, if we discover these laws we can explain, manage, control and even create systems to obey them: God has created the universe according to his order, thus, it is the job of the managers to create and govern organisations according

to their understanding of order. Authors such as Nicolis and Prigogine, however, consider such a premise to be a misconception (Prigogine & Nicolis, 1989). They contend that man must have looked for the power of creation in the wrong place and, because of this, created the domination of one person's will over the others; and an order of human enterprise where control and rigid structures are the norm. The power of creation, as studies in deterministic chaos have shown, lies within what is being created, within the building blocks and their communication with each other. 'As there is no one to build nature we must give to its very elements the microscopic activity, a description that accounts for the building process' (Prigogine & Stangers, 1984).

The phenomenal domain of human enterprises is realised through the network of interactions between the human actors. Stacey, in interpreting the impact of chaos theory on management paradigms argues that such networks through local agent interactions are capable of spontaneous self-organisation, to produce emergent orderly, evolving patterns of behaviours of the network without any prior comprehensive system wide blueprint for the evolution of the system (Stacey, 1992). It is clear, therefore, that bestowing on managers the sole responsibility for the design of the rules and structures of their organisation is a perilous route based on a fragile illusion. The dynamics are determined by the pattern and nature of the actor's relationship. What's more, the response to any perturbation is determined by these very dynamics. Stabilising the behaviour of the network means simply repeating the past. When operating in the chaotic region, however, the network is capable of rapidly recognising fluctuations in the environment and generating flexible behaviours in response. The 'tuning' of the network in response to these perturbations is accomplished through continuous evolution of the structure. This is what Maturana and Varela (Maturana and Varela, 1987) define as adaptation and learning. The flexibility to learn and innovate in turbulent environments is essential. Far from equilibrium, organisations begin to perceive the smallest changes in the environment or, indeed, inside themselves. Further, since only variety absorbs variety, organisations respond by self-organising themselves to react to fluctuations and to adapt to the environment. There are multiple paths from which to choose. Dissipative structures emerge that promote alignment with the environment. New order and possibilities for future development arise from amplification and exploitation of fluctuations.

Indeed, the concept of the dissipative structure has thrown light on the role of the manager, as one of a conductor of communication, promoting coherence in the enterprise activities and the exploration of new horizons. It is by organising the system to work in the chaotic region that high sensitivity to perturbations in the environment can be achieved and orderly behaviours can emerge and evolve through mutual re-enforcement. Managers can exploit the chaotic characteristic of behaviour by looking for conditions that will allow small efforts to produce a significantly variable spectrum of appropriate behaviours. The future emerges through spontaneous self-organisation and there is no alternative but to make the change and see what happens, to discover where you are going as you are getting there. We are looking for order that allows change and flexibility. We are looking for meditative organisations that promote listening and continuous tuning with the environment. In chaotic systems, the issue is not simply one of finding the answers, but in general one of knowing the questions. In the face of uncertainty, we cannot know what we do not know. Therefore, any study should be conducted according to which institutional form (or forms) is best able to contend with the unknowable future. The institutional form, thus, needs to be able to match the ever-changing variety of the environment. If the environment is changing quickly, and we cannot predict these changes well in advance, we need autonomous and spontaneously self-organising systems. In a chaotic world, there is no knowledge of either future problems or their possible solutions. Therefore, our management policies should be concentrating on the means rather than the end (Sice, Mosekilde and French, 2000). In addition, as the operation of coherence in social systems, is realised through communication, special attention should be given to the linguistic domain, to variety of the language and to

the patterns of the conversation network of organisations.

7. Concluding remarks

Research into social systems inevitably involves and relies on human communication.

The communication process involving the researcher and other actors that are the object of research inevitably changes to a lesser or larger degree the initial perspective, assumptions and opinions of all those involved. It is ethically and practically important that this communication process is a focus of reflection in the research enquiry.

Although social scientists communicate in numerous ways, interviewing their subjects, engaging discursively with others, publishing their work, and thus continuously engaging in language, self-reflection on the application of language theory is surprisingly rare in the literature.

Languaging surely affects our perceptions, how we create a world, and in that world what becomes real to us. Without an awareness of our languaging we are, as Heinz von Foerster (1979) noted, double blind: We do not see (certain things that other language uses could bring forth) and we do not see our not seeing this.

The cure for such blindness lies in consciously deviating from established linguistic practices, for example, by inventing a new vocabulary, by introducing new metaphors or by creating different communities to language. 'Second order' research methodologies are needed to bring into consideration the importance of 'second-order' understanding and the role of language in creating reality. In a second order philosophy the employees are engaged as researchers, it is not action research conducted by a third party but research conducted by the individuals involved with input from a third party. Research that can be carried on by the employees, providing the innovative drive and continued improvement, enlisting the help of consultants and academics as and when required to fill the role of facilitator with the required fields of expertise identified by the employees themselves. It is the act of turning employees into researchers, who understand the dynamics of there own organisation. Along with input from academia acting in the role of consultants and facilitators, that brings the second order and the innovation to this approach. It is the members (managers and employees) of the organisation that define the area of concern, develop the language, analyse the findings and develop the action plans that from the solutions.

Organisationally it must always be remembered that evolution is a continuous process as already stated in section 6, structure and order are not static they adapt themselves to changing environmental conditions, reacting to the perturbations received from the external environment. To think of structure and order as static is a mistake, stifling adaptation by clinging to outmoded order and structure can only cause standstill in organisational evolution. With the speed of external environmental change allied with the growing unpredictability of change, the realisation that organisations should be considered as evolving systems is important. For organisations, the saying *"evolve or die"* is more important today than ever before.

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